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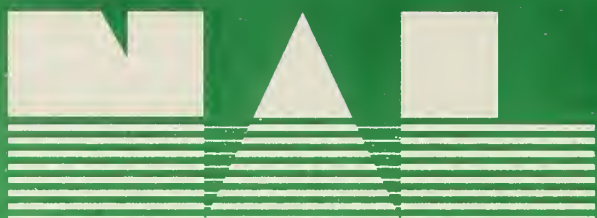
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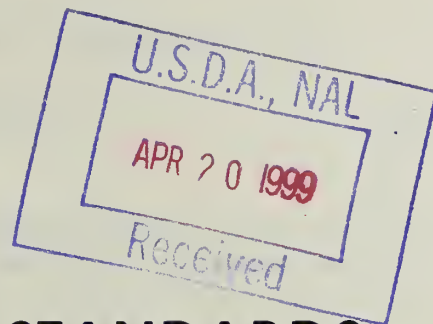
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**United States
Department of
Agriculture**



National Agricultural Library



UNITED STATES STANDARDS

for grades of

REFINERS' SIRUP

First Issue
As Amended

EFFECTIVE JUNE 15, 1967

**UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
FRUIT AND VEGETABLE DIVISION
PROCESSED PRODUCTS STANDARDIZATION AND INSPECTION BRANCH**

These standards supersede the standards which have been in effect since
January 5, 1952

The first issue of the United States Standards for Grades of Refiners' Sirup was amended, effective June 15, 1967. These amended standards contain minor modifications in format (including new section numbers) and rearrangement of text. None of the requirements were changed by the amended standards, published in the Federal Register of June 15, 1967 (32 F.R. 8575).

These standards are included in the Code of Federal Regulations, Title 7 -- Agriculture, Part 52.

Issued under the authority of the Agricultural Marketing Act of 1946, which provides for the development of official U.S. grades to designate different levels of quality, the grade standards are for the voluntary use of producers, suppliers, buyers, and consumers. As in the case of other standards for grades of processed fruits and vegetables, these standards are designed to facilitate orderly marketing by providing a convenient basis for buying and selling, for establishing quality control programs, and for determining loan values.

These standards will also serve as a basis for the inspection and grading of this commodity by the Federal inspection service, which is also provided under the Agricultural Marketing Act of 1946. This service, available for inspection and grading of other processed products as well, is offered to interested parties, upon application, on a fee-for-service basis.

These standards are issued by the Department after careful consideration of all data and views submitted, and the Department welcomes suggestions which might aid in improving the standards in future revisions. Comments may be submitted to, and copies of standards obtained from:

Chief, Processed Products Standardization
and Inspection Branch
Fruit and Vegetable Division, AMS
U.S. Department of Agriculture
Washington, D.C. 20250

UNITED STATES STANDARDS FOR GRADES OF REFINERS' SIRUP^{1a}

Effective June 15, 1967

Subpart—U.S. Standards for Grades of Refiners' Sirup^{1a}

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AUTHORITY: The provisions of this subpart issued under sec. 205, 60 Stat. 1090; 7 U.S.C. 1624.

GENERAL

§ 52.6041 Definition.

"Refiners' sirup" means a liquid product obtained from the refining of cane or beet sugar. The total soluble nonsugar solids content of refiners' sirup exceeds 6 percent of the total soluble solids. All of the sirup constituents have been subjected to the processes of clarification and decolorization, or equivalent purification, and it may be partially or wholly inverted.

GRADES

§ 52.6042 Grades for refiners' sirup.

The grades for refiners' sirup are designated as follows:

^{1a} Compliance with the provisions of this standard shall not excuse failure to comply with the provisions of the Federal Food, Drug, and Cosmetic Act (or with applicable State laws and regulations).

¹ "RS" is an abbreviation for "refiners' sirup".

(a) "U.S. Fancy" or "U.S. Grade A" Refiners' Sirup.

(b) "U.S. Choice" or "U.S. Grade B" Refiners' Sirup.

(c) "U.S. Extra Standard" or "U.S. Grade C" Refiners' Sirup.

(d) "U.S. Standard" or "U.S. Grade D" Refiners' Sirup.

(e) "U.S. Substandard" or "U.S. Grade E" Refiners' Sirup.

§ 52.6043 Grade specifications.

Specifications for each grade of refiners' sirup are as follows:

(a) U.S. Fancy or U.S. Grade A Refiners' Sirup consists of refiners' sirup which possesses a flavor characteristic of refiners' sirup of fancy quality; which contains no sediment; which is free of foreign matter; which has a Brix solids content of not less than 72 percent when corrected to 20° C. (68° F.); which has a ratio of total sugars (sucrose plus reducing sugars) to Brix solids of not less than 92 percent; which has a ratio of sulfated ash to Brix solids of not more than 3.0 percent; and which possesses a color no darker than RS Color Standard No. 1.

(b) U.S. Choice or U.S. Grade B Refiners' Sirup consists of refiners' sirup which possesses a flavor characteristic of refiners' sirup of choice quality; which contains no sediment; which is free of foreign matter; which has a Brix solids content of not less than 72 percent when corrected to 20° C. (68° F.); which has a ratio of total sugars (sucrose plus reducing sugars) to Brix solids of not less than 86 percent; which has a ratio of sulfated ash to Brix solids of not more than 6 percent; and which possesses a color no darker than RS Color Standard No. 2.

(c) U.S. Extra Standard or U.S. Grade C Refiners' Sirup consists of refiners'

sirup which possess a flavor characteristic of refiners' sirup of standard quality; which contains no excess of sediment; which is practically free of foreign matter; which has a Brix solids content of not less than 76 percent when corrected to 20° C. (68° F.); which has a ratio of total sugars (sucrose plus reducing sugars) to Brix solids of not less than 78 percent; which has a ratio of sulfated ash to Brix solids of not more than 10 percent; and which possesses a color no darker than RS Color Standard No. 3.

(d) U.S. Standard or U.S. Grade D Refiners' Sirup consists of refiners' sirup which possesses a flavor characteristic of refiners' sirup of standard quality; which contains no excess of sediment;

which is practically free of foreign matter; which has a Brix solids content of not less than 76 percent when corrected to 20° C. (68° F.); which has a ratio of total sugars (sucrose plus reducing sugars) to Brix solids of not less than 70 percent; and which has a ratio of sulfated ash to Brix solids of not more than 14 percent.

(e) U.S. Substandard or U.S. Grade E Refiners' Sirup consists of refiners' sirup that fails to meet the specifications for U.S. Standard Refiners' Sirup.

(f) Table of specifications for grades. The specifications for the designated grades of refiners' sirup are set forth in summary form in Table I of this paragraph.

TABLE I—TABLE OF SPECIFICATIONS FOR GRADES

Factors	Grades and specifications			
	U.S. Fancy or U.S. Grade A refiners' sirup	U.S. Choice or U.S. Grade B refiners' sirup	U.S. Extra Std. or U.S. Grade C refiners' sirup	U.S. Standard or U.S. Grade D refiners' sirup
Brix solids corrected to 20° C. (68° F.).	Not less than 72 percent		Not less than 76 percent	
Ratio of total sugars (sucrose plus reducing sugars) to Brix solids.	Not less than 92 percent.	Not less than 86 percent.	Not less than 78 percent.	Not less than 70 percent.
Ratio of sulfated ash to Brix solids.	Not more than 3 percent.	Not more than 6 percent.	Not more than 10 percent.	Not more than 14 percent.
Color-----	No darker than RS Color Standard No. 1.	No darker than RS Color Standard No. 2.	No darker than RS Color Standard No. 3.	No color limit.

(g) Tolerances for certification of officially drawn samples. When certifying samples that have been officially drawn and which represent a specific lot of refiners' sirup, the grade for such lot will be determined by averaging the factors of all the samples representing the

lot: *Provided*, That not more than $\frac{1}{6}$ of such samples fail to meet the requirements of the grade specifications set forth in Table I: *And further provided*, That each of the samples which represent a specific lot of refiners' sirup meet the limiting specifications set forth in Table II of this paragraph.

TABLE II—TABLE OF LIMITING SPECIFICATIONS FOR REFINERS' SIRUP

Factors	Grades and specifications			
	U.S. Fancy or U.S. Grade A refiners' sirup	U.S. Choice or U.S. Grade B refiners' sirup	U.S. Extra Standard or U.S. Grade C refiners' sirup	U.S. Standard or U.S. Grade D refiners' sirup
Ratio of total sugars (sucrose plus reducing sugars) to Brix solids.	Not less than 91 percent.	Not less than 85 percent.	Not less than 77 percent.	Not less than 69 percent.
Ratio of sulfated ash to Brix solids.	Not more than 3.5 percent.	Not more than 6.5 percent.	Not more than 11 percent.	Not more than 15 percent.
Color-----	No darker than RS Color Standard No. 2.	No darker than RS Color Standard No. 3.	Darker than RS Color Standard No. 3.	

DETERMINATION OF FACTORS

§ 52.6044 Quantitative determination of factors.

Quantitative determination of the respective factors other than color is made by the methods set forth in this section for the respective factors:²

(a) *Brix solids*. By Brix hydrometer, correcting to 20° C. (68° F.), using the double dilution method.

(b) *Total sugars*—(1) *Sucrose*. By the chemical method, using invertase as the inverting agent; the Lane-Eynon volumetric method for reducing sugars before and after inversion; or by Jackson-Gillis double polarization method number IV.

(2) *Reducing sugar*. By the Lane-Eynon volumetric method, or by the Munson-Walker gravimetric method.

(c) *Sulfated ash*. By the sulfation method, with no deduction.

§ 52.6045 Preparation of basic solutions and RS color standards.

Chemicals of reagent grade, at room temperature, are used in the preparation of the solutions described in this section.

(a) *Preparation of basic solutions*—

(1) *Solution A*. Dissolve 10 grams of $\text{CuCl}_2 \cdot 2\text{H}_2\text{O}$ in a sufficient quantity of 10 percent hydrochloric acid solution to make 100 milliliters.³

(2) *Solution B*. Dissolve 50 grams of $\text{CoCl}_2 \cdot 6\text{H}_2\text{O}$ in a sufficient quantity of 10 percent hydrochloric acid solution to make 500 milliliters.

(3) *Solution C*. Dissolve 50 grams of $\text{FeCl}_3 \cdot 6\text{H}_2\text{O}$ in a sufficient quantity of 10 percent hydrochloric acid solution to make 500 milliliters.

² These methods are described in Official Methods of Analysis of the Association of Official Agricultural Chemists, Seventh Edition, 1950, except the Jackson-Gillis double polarization method number IV is described in Circular C440, Nat. Bur. Standards, May 1942, or in the Sugar Analysis, by Browne and Zerban, 3d Edition, 1948, John Wiley & Sons, Inc.

³ Ten percent hydrochloric acid solution is prepared by diluting 242.6 milliliters of reagent grade hydrochloric acid to one liter.

(4) *RS stock solution*. Mix 50 milliliters of Solution A and 485 milliliters of Solution B with 465 milliliters of Solution C.

(b) *Preparation of RS color standards*—(1) *RS Color Standard No. 1*. Dilute 10 milliliters of the RS stock solution to 100 milliliters with 10 percent hydrochloric acid solution.

(2) *RS Color Standard No. 2*. Dilute 18 milliliters of the RS stock solution to 100 milliliters with 10 percent hydrochloric acid solution.

(3) *RS Color Standard No. 3*. Dilute 50 milliliters of RS stock solution to 100 milliliters with 10 percent hydrochloric acid solution.

§ 52.6046 Use of RS color standards in determining color factor.

(a) *Containers required*. The containers needed to perform the visual color comparison test set forth in paragraph (c) of this section are:

(1) A container for a sample of refiners' sirup for which the color factor is to be determined (such container hereinafter called "sample container"); and

(2) Containers for the respective RS color standards.

(b) *Description of containers*. The sample container is made of colorless and transparent glass or plastic material and is of such shape and construction as to provide a flat $\frac{1}{8}$ -inch thickness of the sample to be viewed. The container for each RS color standard is a colorless and transparent 2-ounce French square water sample bottle having outside base dimensions of $1\frac{7}{16}$ inches by $1\frac{7}{16}$ inches.

(c) *Visual comparison test*. A sample of refiners' sirup is compared in the following manner with the RS color standards to determine whether the sample is darker than one or more of such color standards:

(1) Place each of the RS Color Standards Nos. 1, 2, and 3 in separate 2-ounce French square water sample bottles;

(2) Place a sample of the refiners' sirup in a sample container; and

(3) In order to determine whether the sample is darker than one or more of the RS color standards, visually compare the sample with each of the color standards by looking through them at a light-colored background in diffuse light. The sample is viewed through its $\frac{1}{8}$ -inch

thickness; and each RS color standard is viewed at right angles to one of the sides of its container.

Dated: June 8, 1967.

G. R. GRANGE,
Deputy Administrator,
Marketing Services.

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*These amended standards, with minor modifications in format, were
republished in the Federal Register of June 15, 1967 (32 F.R. 8575)*

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